



The Minuteman Repeater Association

The Minuteman

Volume 42, Number 2

November 2012



Membership Meeting ~ Wednesday, November 14 ~ 7 PM

What We Owe The Early Hams

***How ham radio operators made friends, saved lives,
and helped to create commercial radio.***

Donna Halper

Tatnuck Bookseller in Westborough

Talk-in: 147.27

Our November guest speaker is Donna Halper. Donna has many interesting stories about what ham radio operators have done over the past 100 years to help their communities and help build the commercial broadcast industry. Ms. Halper is a respected and experienced media historian, who makes regular appearances on WBZ's Jordan Rich Show. She is also heard on WBUR-FM and WGBH-FM and is frequently quoted in the Boston Globe and other newspapers. She is the author of five books, the most recent of which is "Boston Radio 1920-2010," a history of Boston radio in words and pictures. You can read more about Donna at <http://www.donnahalper.com/bio.html>.

Tatnuck Bookseller

18 Lyman Street (Lyman at Route 9)
Westborough, MA 01581

From the North/South/East: Take I-495 to the route 9 interchange in Westborough. Head West on route 9 to the Lyman street traffic light. Take a left onto Lyman street. Tatnuck Bookseller will be about 1/2 mile down Lyman on your right.

From the West: Take route 9 east to the Lyman street traffic light in Westborough. Turn right onto Lyman Street. Tatnuck Bookseller will be about 1/2 mile down Lyman on your right. Map at:
<http://www.mmra.org/dir/tatnuck.html>

MMRA Bylaws Revision Vote at our NOVEMBER meeting

The MMRA will be holding a vote to revise its bylaws at our November meeting. We need a quorum of 40 Members, so please try to attend if you can. These changes reduce the quorum requirement to conduct business and clarify the voting procedures for different orders of businesses. They also create a provision for life membership. Those interested should read the full documents on our web page: <http://www.mmra.org/>

Table of Contents

Next Meeting	1	President's Corner	4
Repeater Information	2	Treasure's Report	5
September Membership Meeting	3	MMRA Information	7
October Business Meeting	4	Fleas	8
Repeater Update	4		

Have you renewed your membership yet?

All 2010 memberships expired on August 31st! If you haven't renewed - it's time! Go to the Member's login link at www.mmra.org to renew online. If you prefer to renew by U.S. Mail, you can print out a membership application and mail it with a check to MMRA, PO Box

About the Minuteman Repeater Association

The Minuteman Repeater Association (MMRA) is dedicated to Amateur Radio and public service. The MMRA maintains a large system of repeaters in Eastern Massachusetts.

The MMRA meets (usually) on the 3rd Wednesday of each month from September to June. Meeting times, locations, and talk-in frequency vary and are announced in this newsletter and on weekly nets. Meetings are open to all interested parties. Guest speakers and programs of general interest occur in September, November, January, March, and May. The intervening meetings are also open to all members and are for general business.

The Minuteman newsletter is Emailed one week before each general interest meeting. Members are encouraged to submit articles which can be sent to the editor at newsletter@mmra.org. The deadline for articles is the last Friday of the month preceding the meeting.

Each Tuesday evening at 8PM the MMRA links most of the repeaters for an open net. The topic is "Technical Information and Other Stuff". Join us!

Membership in the MMRA is open to all radio amateurs. Annual dues are \$25 per individual or \$35 per family. See our website for details.

Email to the club leadership should be sent to contact@mmra.org. The MMRA maintains a web site at: <http://www.mmra.org/>

An email distribution list for club members named "MMRA" is at: www.yahoogroups.com/

No part of this newsletter can be copied or posted elsewhere without prior approval from the club. Your cooperation in this matter is appreciated.

MMRA QRM Policy

MMRA members and all other operators are strongly encouraged to report repeater activity that does not abide by Part 97 rules or accepted amateur radio practice to the board of directors at contact@mmra.org or via other means.

The most effective way (and probably the only effective way) to deal with an individual causing QRM is to NOT engage that individual on the air. Please include the time and date of any incident. Measures are being taken to make audio recordings of repeater activity.

Repeater and Frequency Information

Up-to-date information about both MMRA repeaters and affiliate repeaters can be found at

<http://www.mmra.org/repeaters/index.html>

Band	Location	Freq	PL	Call	Linking	
					To Hub 1	To Hub 2
MMRA Voice Repeaters						
10m	Marlboro	29.680	131.8	W1MRA	PTL	PTL
6m	Marlboro	53.810	71.9	W1BRI	PTL	PTL
2m	Boston	145.160	—	W1MRA	D-Star	
	Belmont	145.430	67.0	W1MRA	—	—
	Mendon	146.610	146.2	AE1C	FTL	PTL
	Quincy	146.670		W1BRI	PTL	PTL
	Burlington	146.715		KC1US	PTL	PTL
	Weston	146.790		N1BE	PTL	PTL
	Brookline	146.820		K5TEC	FTL	PTL
	Marlboro	147.270		W1MRA	PTL	PTL
1¼m	Hopkinton	223.940	103.5	K1KWP	PTL	FTL
	Quincy	224.400		N1KUG	PTL	FTL
	Weston	224.700		N1NOM	PTL	FTL
	Marlboro	224.880		W1MRA	PTL	FTL
70cm	Lowell	442.250	88.5	K1LVF	FTL	PTL: 446.775
	Weston *	442.700		W1MRA	Network Hub 2 (PTL to Hub 1)	
	Burlington	446.775		W1DYJ	FTL	PTL
	Southboro	449.575		W1BRI	PTL	PTL
	Marlboro *	449.925		W1MRA	Network Hub 1	
33cm	Boston *	927.0625	D244	K1RJZ	PTL	PTL
	Marlboro *	927.700		W1MRA	PTL	PTL
MMRA Other Systems						
	Marlboro	144.390	none	W1MRA	APRS Digipeater	
	???	145.630	146.2	W1MRA	Fox Box	
* Internet	HUB1— 449.925: IRLP node 4133; Echolink					
	HUB2 — 442.700: IRLP node 4136; Connected to 220 Reflector 9124 on Tuesdays					
	927.0625: IRLP node 4977			Normally linked to the NEAR-900 Reflector, 9125. Linked to MMRA via IRLP for the TIAOS net. Normally linked together.		
	927.700: IRLP node 4978					
Notes:	FTL = Full Time Linked (or default state) PTL = Part Time Linked (on schedule or demand) Note — a repeater can be linked to only one Hub at a time.					
PL:	PL is required to prevent interference. .					

Off The Air

Reduced Power and/or Antenna Height

September Membership Meeting

President Bob, K1IW, first presented a few slides about the repeaters, and then presented a primer on digital transmission:

Repeater Status

- 29.68 Weston/Marlborough – OK
- 53.81 Marlborough – OK
- 145.16 Boston – OFF
- 145.43 Belmont – OK
- 146.61 Mendon – OK
- 146.67 Quincy – OK
- 146.715 Burlington – OK
- 146.79 Weston – OK
- 146.820 Brookline – OK
- 147.270 Marlborough – Reduced Power & Antenna Height



(Note:
927.700
is now
back
OTA, but
at a lower
than normal
antenna
height.)

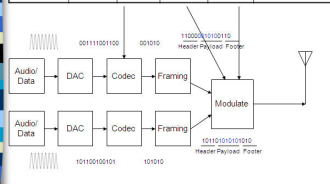
Repeater Status

- 223.94 Hopkinton - OK
- 224.40 Quincy - OK
- 224.70 Weston - OK
- 224.88 Marlborough – Reduced Antenna Height
- 442.25 Lowell – OK
- 442.70 Weston - OK
- 446.775 Burlington – OK
- 449.575 Southborough – OK
- 449.925 Marlborough – Reduced Antenna Height & Local Interference
- 927.0625 Marlborough – OK
- 927.7000 Marlborough - OFF



Standards and Terms

Type	Published	Codes	Modulation	Sharing	Access
P25 Phase I	1989	IMBE	4-FSK	FDMA	12-bit NAC
NXDN	1996/2001	AMBE+2	4-FSK	FDMA	6-bit RAN
D-Star	2004	AMBE	2-GMSK	TDMA	CallSigns
DMR	2005	AMBE+2	4-FSK	TDMA	4-bit Color Code
P25 Phase II	2010	AMBE+2	4-FSK	TDMA	12-bit NAC



Modulation

2 – GMSK: Gaussian Minimal Shift Keying

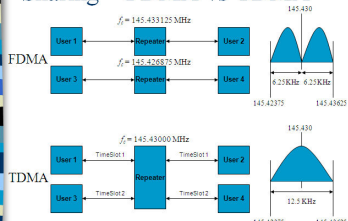
A form of Frequency Shift Keying

Carrier frequency is shifted between two values – one meaning a '0', the other meaning a '1'.

4 – FSK

In this case, we can shift the carrier between one of four values, meaning "00", "01", "10", or "11". Thus two bits are being transmitted simultaneously at any moment.

Sharing – FDMA vs TDMA



September Membership Meeting

Featured Speakers

Bob Stone, N1KMA & Mark Pride, K1RX

For more information: www.ercsystem.com or www.ProHam.com



Newfield Design, Inc.

Expandable Radio Control System

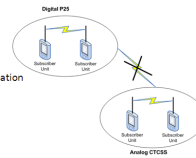
&

Management Software

Bob Stone, N1KMA & Mark Pride, K1RX

What Customer Problem Do We Solve?

- Interoperability
 - Improves Performance of Current Assets
 - Simplifies the Cross Communication challenge
- Modernization Platform
 - Cost effective solution
 - Migration from Analog to Digital
 - Provides Sustainability
 - Ability to add incremental upgrades



Expandable Radio Control System ERCS



Mt. Hope, Maine N1KMA
2 M Repeater 145.210 MHz
ProHam Repeater Controller
Analog & D-STAR

- "Universal Translator"
 - Interoperability
 - All Media Types
 - Modernization
 - Integrate all communications systems into one network
 - Advanced Repeater Control & IP Gateway

ERCS Family of Products

Universal RF Channel Controller
The Basic system building block



- EIA Tone E & M
- Expansion Server Unit
- Digital I/O
- Communications Console
- Universal Interface Module
- PSTN Analog Interface
- 8 Port SLIC
- SCADA I/O

MMRA October Business Meeting

Bob Evans ~ N1BE ~ Clerk

The MMRA held a business meeting at 7PM on October 17 at the office of Stratus Technologies in Maynard, MA. W1MPN, W1BRI, WA1NVC, N1NVK, K1KWP, K1IW, KG1H, N1BDA, W3EVE, N1NVJ, KA1GFN and N1BE were present.

Bob, K1IW reported the status of the repeaters. This info will appear elsewhere in this newsletter. Of particular note is the future use of a multi-mode (analog/d-star) repeater at the Pru.

Kevin, K1KWP, presented a treasurer's report. Details to appear separately in the newsletter.

The board moved to request authorization to spend up to \$3000 for emergency repairs during this fiscal year if necessary. Spending from this budgeted amount will still require board approval and reporting of any expenditures to the membership.

The meeting adjourned at 8:20PM.

Repeater update **Bob DeMattia — K1IW**

All MMRA analog systems are operating at this time. The repeaters at Sligo continue to operate with reduced coverage due to the temporary antennas:

53.81 Receiver
147.27
224.88
449.925

The Weston 146.79/224.70 link transmitter appears to have a lot of difficulty reaching 449.925. Other link transmitters offer fair to excellent signals. There is also a loose connection on the 449.925 antenna mast. This is causing crackling noises on the repeater input.

We have been told we should have access to the Pru site to bring 145.16 back on the air in November. More information about this will be in our January newsletter.



Newly constructed ice bridge for wireless company remains unused, pending resolution of the Sligo cone issue.

President's Corner **Bob DeMattia — K1IW**

Earlier today, I completed my twice-yearly task of changing all the clocks in my house. This is also the time when I check that all of the MMRA repeater clocks have adjusted themselves automatically.

I was lucky. For the first time, all of them had correctly set themselves back an hour. Keeping all the clocks in sync is not as trivial as it might seem. In addition to the daylight savings adjustment, each clock also tends to drift. Some are slow, some are fast. There are a total of fourteen controllers each with their own clock. To help insure synchronization, HUB1 sends out a tone code in the wee hours of the morning telling all controllers to round their time to the nearest minute. Those controllers that have drifted backwards round up. Those that are running fast round down. As long as no controller has drifted more than 30 seconds in the past 24 hours, everything stays synchronized. I wish the clocks in my house were as easy!

Next Business Meeting

19 December

Northborough Public Library
7:00 PM

Treasurer's Report

Kevin Paetzold — K1KWP

This is the first Treasurer's Report since the end of the MMRA **2011-2012** fiscal year which ended on May 31. In this report I will refer to the **2011-2012** year as "**last year**". We are now in the **2012-2013** fiscal year which I will refer to as "**this year**".

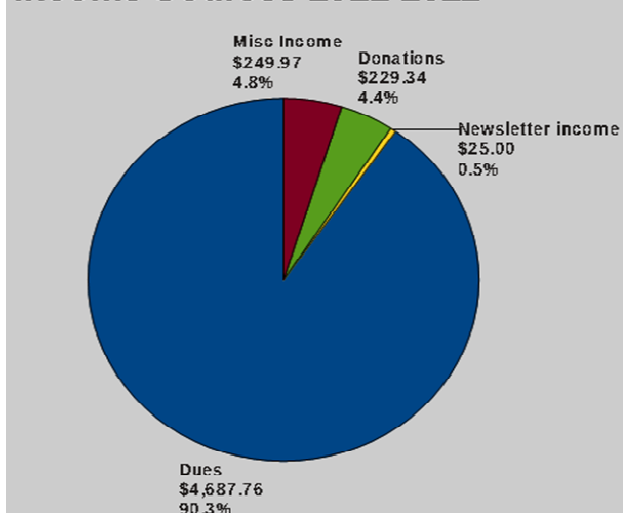
\$7042 was spent on expanding, improving, and maintaining the MMRA repeater system last year. Some of the larger line items/projects and improvements included:

- Fixing the Weston antenna tower (**\$1640**)
- New PA for HUB2 (Weston) (**\$678**)
- Preparing and placing the new shelter at (MRW) Marlboro West (**\$939**)
- Removing antennas at MRW as part of the water tower project (**\$1850**)
- Additional 7K controller with Digital Audio board (**\$500**)
- HUB2 IRLP equipment (**\$400**)

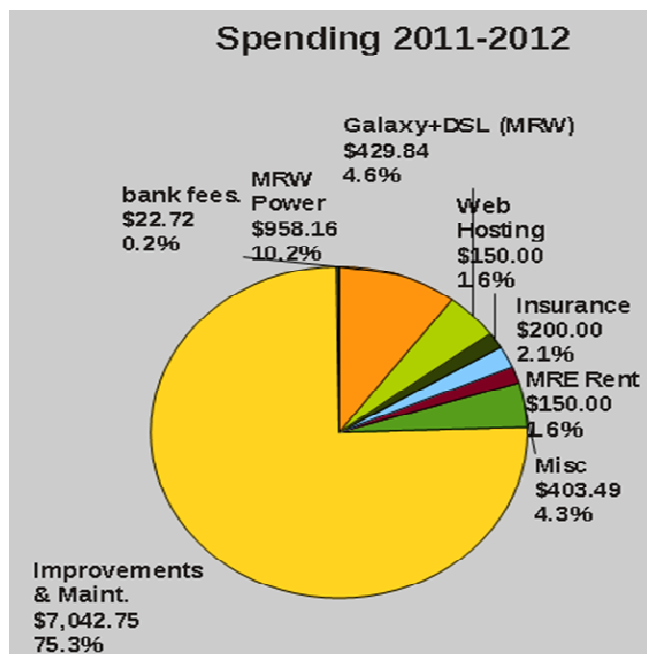
The MMRA is responsible for **21 repeaters on 6 bands** [10M(1), 6M(1), 2M(8), 220(4), 440(5), and 900(2)]. A large number of connectors, power switches, isolators, antenna mast, etc., etc.. etc.. add up for the rest of the \$7042.

From a gross receipts point of view MMRA income last year was **\$4185**. However **\$638** of the above is the result of dues collected last year for this year (2 year memberships etc...). Likewise

Income Sources 2011-2012

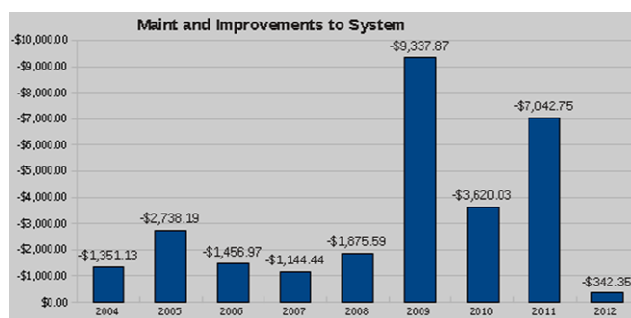


\$1645 in dues was collected in 2010-2011 for last year (2011-2012). The income Pie chart details for the overall income for last year (which is different than the **\$4185** actually received for last year).



Total spending last year was **\$9356** vs. the gross income of **\$4186**. From that perspective the MMRA had a deficit year with spending exceeding income. When the dues for this year (collected last year) are subtracted our spending exceeded our income by **(\$5170)**. The spending pie chart below gives details on the overall spending for last year. "Galaxy" is the DSL provider for MRW and "ISP" is the provider for for the MMRA web page and database hosting service.

The "Maint and Improvements to System" chart shows the amount of money put directly into



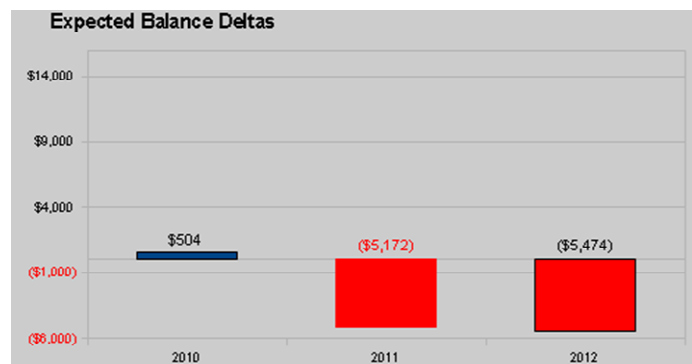
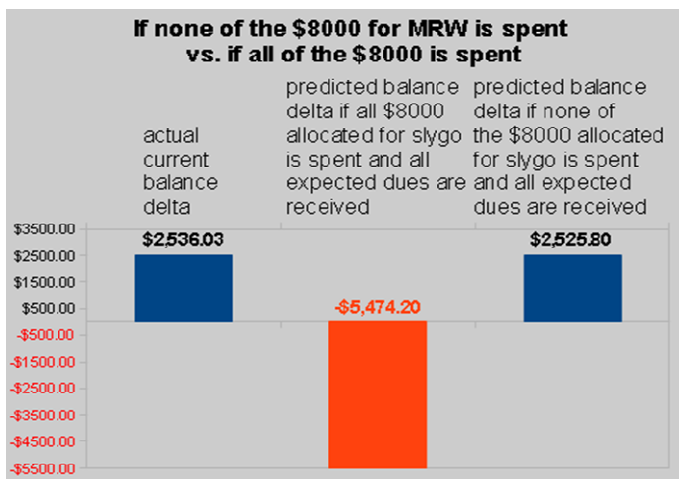
Treasurer's Report ~ Continued

Kevin Paetzold — K1KWP

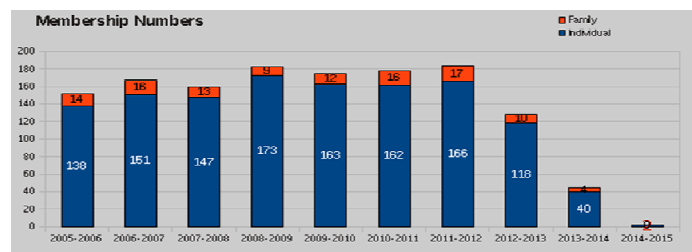
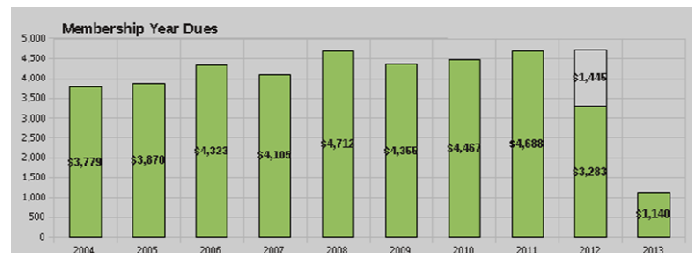
maintaining and improving the system in the last 8 years. **\$342** has been spent on the system so far this year. It should be apparent that investment in the system has increased dramatically in recent years. 2009 was the year that the large income windfall from the Larcen amps etc... occurred.

A large project (by the city) to update and improve the "water tower" at the MRW repeater site has been underway for more than one year at this point. The MMRA has known about and prepared for this project for many years. The MMRA solicited and received donations of several thousand dollars from members over the last several years to support this effort. If we include the MRW shelter replacement effort the MMRA has already spent **\$3000** for this project. The membership has authorized the board to spend an additional **\$8000** for this project. It is not clear if all (or any) of this additional **\$8000** will be spent this year or not. Lets all hope that the project moves forward later this year.

The net effect of the **\$8000** on our finances is shown in the charts below. If we spend the whole **\$8000** it will result in a significant deficit on our cash reserves for the second year in a row. The 2011-2012 (last year) deficit was **16%** of our cash reserves. If all of the **\$8000** is spent this year it would be an additional **19%** reduction in our cash reserves.



The two charts below show our income from dues and the membership stats. We are hoping to receive an additional **\$1445** in dues for this year. Because of new members we need an additional **55** people to renew or join to keep membership parity with last year. About **85** existing members have not yet renewed for this year. **44** people have already renewed for next year.



If you have any questions about the MMRA finances please let me know. All of this information (and much more) is regularly presented at the bi-monthly "business" meetings. The location and schedule of these meetings is available on the web site. They usually occur the third Wednesday of the months without general membership meetings.

2012—2013 Meetings

19 September — Membership Meeting
Bob Stone, N1KMA of Newfield Design
Holiday Inn, Boxborough, MA ~ 7:00 PM

17 October — Business Meeting
Stratus, Maynard ~ 7:00 PM

14 November ~ Membership Meeting
Donna Halper ~ A Short History of Broadcast Radio in Boston
Tatnuck Bookseller, Westborough ~ 7:00 PM

19 December ~ Business Meeting
Northborough Public Library ~ 7:00 PM

16 January ~ Membership Meeting
The MMRA Network, & Free Pizza Night
Southborough House of Pizza ~ 7:00 PM

13 February ~ Business Meeting
Stratus, Maynard ~ 7:00 PM

20 March ~ Membership Meeting
WRTC 2014 ~ Dave Pascoe KM3T & Doug Grant K1DG
Location TBA ~ 7:00 PM

17 April ~ No meeting in April

15 May ~ Membership Meeting
Annual Meeting & Elections
Northborough Public Library ~ 7:00 PM

19 June ~ Business Meeting
Location TBA ~ 7:00 PM

17 July ~ Summer Get Together
Location TBA

21 August ~ Business Meeting
Location TBA

Don't Forget!

Every Tuesday @ 8 PM

Technical, Informational and Other Stuff Net

The MMRA's repeaters are linked Tuesday nights for the TIAOS Net. Join us! This is a good way to keep up with what is happening in the MMRA and ask your ham related questions.

If you would like to try your hand at Net Control contact me at W1DYJ@mmra.org — we have a script you can use.

Current Net Control Operators:

Week 1	WA1JIM	Jimmy Devaire
Week 2	W1DYJ	Larry Banks
Week 3	KQ1Y	Tim Wortley
Week 4	K1KWP	Kevin Paetzold
Week 5	W1DYJ	Larry Banks

To connect using the digital modes during the Net:

- Echolink node *NEW-ENG* (9123)
- IRLP node 4133

MMRA Leaders

Officers

President	Bob DeMattia	K1IW
Vice President	Steve Telsey	N1BDA
Secretary	John McGovern	W1JMC
Treasurer	Kevin Paetzold	K1KWP
Clerk	Bob Evans	N1BE
Technical Officer	Bryan Cerqua	W1BRI

Board of Directors

Director »2014	Clark Conti	N1NVK
Director »2014	Mike Neilsen	W1MPN
Director »2013	Steve Schwarm	W3EVE
Director »2013	Roger Coulson	WA1NVC

Repeater Trustees, Appointed

Boston 927.0625	Rick Zach	K1RJZ
Brookline 146.820	Bob Phinney	K5TEC
Burlington 146.715	Bruce Pigott	KC1US
Burlington 446.775	Larry Banks	W1DYJ
Hopkinton 223.940	Kevin Paetzold	K1KWP
Lowell 442.250	Vince De La Flor	K1LVF
Marlboro 53.810; Quincy 146.670; Southboro 449.575	Bryan Cerqua	W1BRI
Marlboro 144.390, 147.270, 224.880, 449.925, 927.700		
Belmont 145.430; Weston 442.700 — all as W1MRA		
	Bill Northup	N1QPR
Mendon 146.610	Jim Podsiadlo	AE1C
Weston 146.790	Bob Evans	N1BE
Weston 224.700	Eddie Mulhern	N1NOM

Appointed, non-Voting

Newsletter Editor	Larry Banks	W1DYJ
Emergency Coord.	Kevin Paetzold	K1KWP
Public Service Coord.	Bruce Pigott	KC1US
VEC Liaison	Bill Wade	K1IJ
Net Manager	Larry Banks	W1DYJ
Web Page Editor	Bob DeMattia	K1IW

Previous issues of the MMRA Newsletter are available at:

www.mmra.org → [Newsletter Archive](#) (on the left)

MMRA VE Sessions

3rd Saturday of each Month

9 AM at the Marlboro Public Library

Contact: Bill Wade, K1IJ 781-891-9079

Evenings 6 - 10 PM Weekends 8 AM to 10 PM.

Accredited by the ARRL VEC

Upcoming Membership Meeting ~ Wednesday, November 14 ~ 7 PM

What We Owe The Early Hams

**How ham radio operators made friends, saved lives,
and helped to create commercial radio.**

Donna Halper

Tatnuck Bookseller in Westborough

Calendar of Ham Radio Flea Markets

See this web site for more information: <http://mit.edu/w1gsl/Public/ne-fleas>

3 Nov	Bourne MA FARA @UpperCC VoTech	13,14 Apr	Wakefield MA Photographica
3 Nov	Londonderry NH IRS @Lions	21 Apr	Cambridge MA FLEA at MIT
17 Nov	Salem NH @Rockingham	3,4 May	Deerfield NH NEARFest XIII @FG
1 Dec	Windsor CT VR+C Mus 115 Pierson LN	19 May	Cambridge MA FLEA at MIT
16 Feb	Marlboro MA AARC @MidSc	1 Jun	Hermon ME PSARA @HS
16 Feb	Springfield VT CVFMA @VFW	15 Jun	Newington CT NARL @StMarySch
17 Feb	Westford MA NEARC RadioXLIV	16 Jun	Cambridge MA FLEA at MIT
23 Feb	S Burlington VT HAM-CON @HI	21 Jul	Cambridge MA FLEA at MIT
2 Mar	Feeding Hills MA MtTARA @TurnverneinClb	18 Aug	Cambridge MA FLEA at MIT
3 Mar	Hicksville NY LIMARC @LevitHall	7 Sep	Ballston Spa NY SCRACES
29,30 Mar	Lewiston ME AARC ME Conv @Ramada	8 Sep	Newtown CT CARA @TownHall
7 Apr	Southington CT SARA @HS	15 Sep	Cambridge MA FLEA at MIT
7 Apr	Framingham MA FARA @KeefeTech	21 Sep	Forestdale RI RIAFMRS @VFW
		13 Oct	Meriden CT Nutmeg @Sheraton

THE MINUTEMAN REPEATER ASSOCIATION

MMRA
P.O. Box 669
Stow, MA. 01775-0669

Email: contact@mmra.org



WE'RE ON THE WEB
[HTTP://WWW.MMRA.ORG/](http://www.mmra.org/)